

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An in-shell egg pasteurization system configured to pasteurize and handle eggs comprising:

a loading system configured to accept an in-shell egg; and

a microwave system configured to impart microwave energy to the egg, a first quantity of energy being ~~applied~~ predominantly directed to a yolk of the in-shell egg in accordance with at least one of a size and a temperature of the yolk to heat the yolk to a first predetermined temperature, a second quantity of microwave energy ~~separately~~ being predominantly imparted to an albumen of the in-shell egg to heat the albumen to a second predetermined temperature.

2. (Original) The system according to claim 1, further comprising a packer configured to pack the in-shell egg, the packer arranged one of downstream and upstream of the microwave system.

3. (Original) The system according to claim 1, further comprising a high-speed grading system configured to grade the in-shell egg, the grading system arranged one of downstream and upstream of the microwave system.

4. (Original) The system according to claim 1, further comprising an egg washer configured to wash an exterior of the in-shell egg.

5. (Original) The system according to claim 4, further comprising an egg dryer configured to dry the in-shell egg.

6. (Original) The system according to claim 1, further comprising a leak detector and removal system configured to identify and remove the in-shell eggs having a leak.

7. (Original) The system according to claim 1, further comprising a crack detector and removal system configured to identify and remove the in-shell egg having a crack.

8. (Original) The system according to claim 1, further comprising a dirt detector and removal system configured to identify and remove an in-shell egg having dirt on a surface.

9. (Original) The system according to claim 1, further comprising a weighing and removal system configured to determine a weight of the in-shell egg.

10. (Original) The system according to claim 9, wherein the weighing and removal system is configured to remove the in-shell egg in accordance with at least one of the weight and a starting temperature.

11. (Original) The system according to claim 9, wherein the microwave system is configured to impart the microwave energy to at least one of the yolk and the albumen in accordance with the weight.

12. (Original) The system according to claim 1, further comprising an oven configured to maintain the in-shell egg at a predetermined pasteurization temperature for a predetermined time interval arranged downstream of the microwave system.

13. (Original) The system according to claim 12, wherein the predetermined pasteurization temperature is in a range of between 120°F and 140°F.

14. (Original) The system according to claim 12, wherein the predetermined time interval is between 10 minutes and 90 minutes.

15. (Original) The system according to claim 12, wherein the oven includes a heating medium.

16. (Original) The system according to claim 15, wherein the heating medium includes at least one of hot air and steam.

17. (Original) The system according to claim 1, further comprising a cooler configured to cool the in-shell egg.

18. (Original) The system according to claim 17, wherein the cooler is configured to cool the in-shell egg to a temperature in a range of between 45°F and 75°F.

19. (Original) The system according to claim 1, further comprising an equilibrator arranged upstream of the microwave system, the equilibrator configured to heat the in-shell egg to a third predetermined temperature.

20. (Original) The system according to claim 19, wherein the third predetermined temperature is in a range of between 100°F and 130°F.

21. (Original) The system according to claim 1, wherein the first predetermined temperature is in a range of between 130°F and 160°F.

22. (Original) The system according to claim 1, wherein the second predetermined temperature is in a range of between 100°F and 140°F.

23. (Currently Amended) An in-shell egg pasteurization system to pasteurize and handle graded eggs, comprising:

a loading system configured to accept an in-shell egg;

a grading system configured to grade the in-shell egg; and

a microwave system configured to impart a first quantity of microwave energy predominantly to a yolk of the in-shell egg in accordance with at least one of a size and a temperature of the yolk to heat the yolk to a first predetermined temperature and to impart a second quantity of microwave energy ~~separately~~ predominantly to an albumen of the in-shell egg to heat the albumen to a second predetermined temperature.

24. (Original) The system according to claim 23, further comprising a packer configured to pack the in-shell egg, the packer arranged downstream of the microwave system.

25. (Original) The system according to claim 23, further comprising a packer configured to pack the in-shell egg, the microwave system arranged between the packer and the grading system.

26. (Original) The system according to claim 23, further comprising an egg washer configured to wash an exterior of the in-shell egg.

27. (Original) The system according to claim 26, further comprising an egg dryer configured to dry the in-shell egg.

28. (Original) The system according to claim 23, further comprising a leak detector and removal system configured to detect the in-shell egg having a leak.

29. (Original) The system according to claim 23, further comprising an oven configured to maintain the in-shell egg at a predetermined pasteurization temperature for a predetermined time interval arranged downstream of the microwave system.

30. (Original) The system according to claim 29, wherein the predetermined pasteurization temperature is in a range of between 120°F and 140°F.

31. (Original) The system according to claim 29, wherein the predetermined time interval is in a range of between 10 minutes and 90 minutes.

32. (Original) The system according to claim 29, wherein the oven includes a heating medium.

33. (Original) The system according to claim 32, wherein the heating medium includes at least one of hot air and steam.

34. (Original) The system according to claim 23, further comprising a cooler configured to cool the in-shell egg.

35. (Original) The system according to claim 34, wherein the cooler is configured to cool the in-shell egg to a temperature in a range of between 45°F and 75°F.

36. (Original) The system according to claim 23, further comprising an equilibrator arranged upstream of the microwave system, the equilibrator configured to heat the in-shell egg to a third predetermined temperature.

37. (Original) The system according to claim 36, wherein the third predetermined temperature is in a range of between 100°F and 130°F.

38-61 (Canceled)

62. (Currently Amended) An in-shell egg pasteurization system, comprising:
a microwave system configured to impart microwave energy predominately directed to a yolk of the in-shell egg in accordance with at least one of a size and a temperature of the yolk to desirously heat the yolk to a first predetermined temperature, said system imparting a ~~separate~~ predominately directed quantity of microwave energy to an encircling albumen of the in-shell egg to desirously heat the albumen to a second predetermined temperature.

63. (Original) The system according to claim 62, wherein the first predetermined temperature is in a range of between 130°F and 160°F.

64. (Original) The system according to claim 62, wherein the second predetermined temperature is in a range of between 100°F and 140°F.

65. (Original) The system according to claim 62, further comprising an equilibrator arranged upstream of the microwave system, the equilibrator configured to heat the in-shell egg to a third predetermined temperature.

66. (Original) The system according to claim 65, wherein the third predetermined temperature is in a range of between 100°F and 130°F.

67. (Original) The system according to claim 62, further comprising an oven arranged downstream of the microwave system, the oven configured to maintain the in-shell egg at a predetermined pasteurization temperature for a predetermined time interval.

68. (Original) The system according to claim 67, wherein the predetermined pasteurization temperature is in a range of between 120°F and 140°F.

69. (Original) The system according to claim 67, wherein the predetermined time interval is in a range of between 10 minutes and 90 minutes.

70. (Original) The system according to claim 62, further comprising a cooler arranged downstream of the microwave system, the cooler configured to cool the in-shell egg to a third predetermined temperature.

71. (Original) The system according to claim 70, wherein the third predetermined temperature is in a range of between 45°F and 75°F.

72. (Original) The system according to claim 70, wherein the cooler is configured to cool the in-shell egg for a predetermined time interval.

73. (Original) The system according to claim 72, wherein the predetermined time interval is in a range of between 1 minute and 20 minutes.

74-85 (Canceled)

86. (New) A method of pasteurizing an in-shell egg, comprising the steps of:

imparting a first quantity of microwave energy predominately to a yolk of the in-shell egg in accordance with at least one of a size and a temperature of the yolk to heat the yolk to a first predetermined temperature; and

imparting a second quantity of microwave energy predominately to an albumen of the in-shell egg to heat the albumen to a second predetermined temperature.

87. (New) The method according to claim 86, wherein the first predetermined temperature is in a range of between 130°F and 160°F.

88. (New) The method according to claim 86, wherein the second predetermined temperature is in a range of between 100°F and 140°F.

89. (New) The method according to claim 86, further comprising the step of heating both the yolk and albumen of the in-shell egg to a third predetermined temperature before the microwaving steps.

90. (New) The method according to claim 89, wherein the third predetermined temperature is in a range of between 100°F and 130°F.

91. (New) The method according to claim 86, further comprising the step of maintaining the in-shell egg at a predetermined pasteurization temperature for a predetermined time interval after the microwaving steps.

92. (New) The method according to claim 91, wherein the predetermined pasteurization temperature is in a range of between 120°F and 140°F.

93. (New) The method according to claim 91, wherein the predetermined time interval is in a range of between 10 minutes and 90 minutes.

94. (New) The method according to claim 86, further comprising the step of cooling the in-shell egg to a third predetermined temperature after the microwaving steps.

95. (New) The method according to claim 94, wherein the third predetermined temperature is in a range of between 45°F and 75°F.

96. (New) The method according to claim 94, wherein the in-shell egg is cooled in the cooling step for a predetermined time interval.

97. (New) The method according to claim 96, wherein the predetermined time interval is in a range of between 1 minute and 20 minutes.